



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,118	08/25/2003	Soon Shin Chee	X-1389 US	3199

24309 7590 11/09/2006

XILINX, INC
ATTN: LEGAL DEPARTMENT
2100 LOGIC DR
SAN JOSE, CA 95124

EXAMINER

HA, NATHAN W

ART UNIT	PAPER NUMBER
----------	--------------

2814

DATE MAILED: 11/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,118

Applicant(s)

CHEE ET AL.

Examiner

Nathan W. Ha

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,6-11,14,17,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4, 6-11, 14, 17, and 19-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 4, 6-11, 14, 17, and 19-20 are stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, as previously addressed. The paragraph ([0019]), which pointed out by the applicants in the remarks mentions nothing about, "applying a force along a wall of said tapered through-hole, said wall extending substantially vertically from said substrate.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1,4,6-11, 14, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fehr et al. (US 5436407, newly cited, hereinafter Fehr) and in view of McShane et al. (US 5,105,259, newly cited, hereinafter, Mc Shane.)

In regard to claims 1, 4, and 11, in fig.4, Fehr discloses a conductive lid 41 adapted to function as a heat sink for an integrated circuit, said conductive lid comprising:

- a recessed portion adapted to receive a die 28 of said integrated circuit;

- a foot portion extending from the top of said conductive lid to a surface adapted to be coupled to a substrate of said integrated circuit; and

- a through-hole 62 located in said foot portion, and

- adapted to receive an adhesive 46 to secure said conductive lid to said substrate of said integrated circuit;

Fehr however does not expressly disclose that the through has a tapered shape of multi-diameter shape.

McShane, in fig. 1, discloses an analogous package including a lid 24 attached to the substrate, having a through hole 24 and 28. the through-holes further have a tapered or multi-diameter shape in order to provide a locking feather to anchor the lid to the substrate through the resin.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to adapt the shape as taught by McShane in order to take the advantage as mentioned.

It is further noted that portions of claims 1, 6-7, and 11 are rejected as obvious over Fehr and McShane.

Fehr and Mc Shane do not explicitly teach a method of applying a force a long a wall in order to secure the lid to the substrate, and injection molding, and drilling, as

claimed in claims 1, 6-7, and 11. However, the limitations are taken to be a product by process limitations; it is the patentability of the claimed product and not of recited process steps which must be established. Therefore, when the prior art discloses a product which reasonably appears to be identical with or only slightly different than the product claimed in a product-by process claim, a rejection based on sections 102 or 103 is fair. A product by process claim directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See *In re Fessman*, 180 USPQ 324,326(CCPA 1974); *In re Marosi et al.*, 218 USPQ 289,292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964,966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process " claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claim in "product by process" claim or not.

In regard to claim 6, the element 46 (in Fehr, and 28 in McShane) is a molding compound.

In regard to claim 8, Fern discloses wherein said foot portion extends around the recessed portion, fig. 3.

In regard to claim 9, as mentioned above, McShane further comprises a plurality of through-holes positioned in said foot portion, fig. 3.

In regard to claim 10, the plurality of holes is symmetrically spaced around said foot portion, Fehr's fig. 3.

In regard to claim 14, as mentioned above, the through hole comprises a conical through hole, Mc Shane's fig. 1.

In regard to claims 19 and 20, Fehr further discloses the adhesive, between the substrate and the lid. The adhesive is capable of thermal conduction.

5. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fehr and Mc Shane as applied to claims 1, 4, 6-11, 14, and 19-20 above, and further in view of Murayama (previously cited.)

In regard to claim 17, the combination discloses all of the claimed limitations as mentioned above except mention the material of the adhesive element such epoxy, or resin. It should be noted that adhesive in this semiconductor area is normally formed by thermal adhesive resin since this material delivers heat from the inside through the heat sink. For instance, Murayama, in fig.2, discloses an analogous package that includes chip 14, heat sink 18, and substrate 12. Murayama, further teaches the heat sink is attached to the substrate through thermal conductive adhesive 17 in order to transfer heat to the outside of the package. See also, [0053].

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of the invention was made to recognize that the material of the adhesive such resin or epoxy in order to facilitate the process of transferring heat out of the package.

Response to Arguments

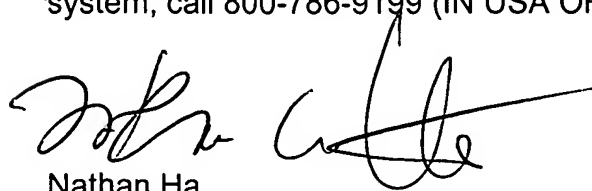
5. Applicant's arguments with respect to claims 1 and 11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (571) 272-1707. The examiner can normally be reached on M-TH 8:00-7:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Nathan Ha', is written over the printed name and title.

Nathan Ha
Primary Examiner
November 5, 2006